

## **REMARKS**

Entry of the foregoing, re-examination and reconsideration of the application identified in caption, as amended, pursuant to and consistent with 37 C.F.R. §1.116, and in light of the remarks which follow, are respectfully requested.

At the outset, Applicants thank Examiner Patterson of the U.S. Patent and Trademark Office for his time and consideration in participating in an interview with Applicants' representative on February 11, 2003. The Interview Summary issued by the Examiner accurately reflects the substance of the interview.

During the interview, Applicants' representative explained that U.S. Patent No. 5,219,003 (*Kerschbaumer*) does not disclose or suggest that Grilon CA6E is present in the external layer of the structure. Applicants' representative presented foreign patent documents which correspond to *Kerschbaumer*, and which further show that the structure disclosed in Table 1 of *Kerschbaumer* does not include Grilon CA6E in the external layer thereof. At the conclusion of the interview, the "Examiner agreed that the submission of said documents would likely overcome the rejection of record" (Interview Summary). The above-described deficiency of *Kerschbaumer* is discussed below in greater detail with respect to the outstanding §103(a) rejections.

Applicants respectfully note that the Examiner-initialed form PTO-1449 mailed with the Official Action dated February 12, 2001 (Paper No. 6), does not contain the Examiner's initials for European Patent Document No. 0 527 237. Issuance of a copy of the form PTO-1449 containing the Examiner's initials for European Patent Document No. 0 527 237, is respectfully requested.

By the above amendments, claims 12 and 24 have been amended for clarification to recite the term "flexural modulus." Claim 25 has been amended for readability purposes by replacing the phrase "adjacently arranged with" with "adjacent to." Entry of the above amendments is proper at least because they place the application in condition for allowance or in better form for appeal. See M.P.E.P. §714.12.

In the Official Action, claims 12 and 24-26 stand rejected under 35 U.S.C. §112, second paragraph, for the reasons set forth at page 2 of the Official Action. Withdrawal of this rejection is respectfully requested for at least the following reasons.

Regarding the rejection of claims 12 and 24 for reciting the term "modulus," it is noted that the modulus recited in claims 12 and 24 is the flexural modulus of the composition. In this regard, Applicants respectfully submit that one skilled in the art would recognize that the recited modulus is the flexural modulus in light of the specification at page 7, lines 14-21, which discusses the modulus with respect to the amount of an impact-strength modifier. For clarification, claims 12 and 24 have been amended to recite the term "flexural modulus." Accordingly, claims 12 and 24 are not unclear for the reasons set forth in the Official Action.

Without addressing the propriety of the rejection of claim 25, in order to expedite prosecution of the present application, Applicants have adopted the Examiner's suggestion to amend claim 25 by replacing the phrase "adjacently arranged with" with "adjacent to."

The Patent Office has rejected claim 26 for reciting the term "international standard SAE J 844," alleging that such term has not been defined. However, as discussed in the specification at pages 14 and 15, the international standard SAE J 844 is a well-known standard for measuring the stress cracking resistance of a structure. The specification at page 15, lines 2-9 sets forth a

detailed description of the testing procedure in accordance with the international standard SAE J 844. Thus, in light of the description set forth in the specification, the term "international standard SAE J 844" as recited in claim 26 is not unclear.

For at least the above reasons, claims 12 and 24-26 are not indefinite for the reasons set forth in the Official Action. Accordingly, withdrawal of the §112, second paragraph, rejection is respectfully requested.

Claims 1-12 and 19-26 stand rejected under 35 U.S.C. §103(a) as being obvious over *Kerschbaumer*. Claim 13 stands rejected under 35 U.S.C. §103(a) as being obvious over *Kerschbaumer* in view of U.S. Patent No. 5,357,030 (*VanBuskirk et al*). Claims 14-18 stand rejected under 35 U.S.C. §103(a) as being obvious over *Kerschbaumer* in view of European Patent Document No. 0 646 627 (EP '627). Withdrawal of these rejections is respectfully requested for at least the following reasons.

According to one aspect of the present invention as defined by claim 1, a multilayer structure is provided comprising at least one internal layer and at least one external layer, wherein at least the internal layer is formed from a composition comprising at least one thermoplastic polyamide and at least one impact-resistance modifier present at a concentration by weight of between 10 and 50% of said composition. At least the external layer is formed from a composition comprising as a polymer matrix a polyamide composition comprising:

- (i) a polyamide thermoplastic copolymer obtained by copolymerization of ε-caprolactam with at least one of the monomers comprising:
  - an amino acid comprising at least 9 carbon atoms, or a corresponding lactam, or
  - a mixture of hexamethylenediamine with a diacid comprising at least 9 carbon atoms,

the ratio by weight between the ε-caprolactam and the total amount of hexamethylenediamine and diacid and/or said amino acid being between 4 and 9, or

(ii) a mixture of at least said thermoplastic polyamide copolymer (i) and at least one second thermoplastic polyamide or copolyamide obtained by polymerization of monomers comprising fewer than 9 carbon atoms, the content by weight of the second polymer or copolymer in the polymer matrix being between 0 and 80% by weight.

*Kerschbaumer* does not disclose or suggest each feature of one aspect of the present invention as defined by claim 1. For example, *Kerschbaumer* does not disclose or suggest an external layer formed from a composition comprising as a polymer matrix a polyamide composition recited in claim 1. In this regard, the Patent Office has taken the position that *Kerschbaumer* discloses at Table 1 a structure which includes Grilon CA6E in the outer layer thereof (Official Action at page 7).<sup>1</sup> For the reasons discussed during the interview and as further explained below, Applicants respectfully but strenuously disagree with the Patent Office's assertion.

*Kerschbaumer* discloses at Table 1, Example 2, a layer structure which includes an internal layer, a middle layer and an external layer. *Kerschbaumer* discloses that the internal layer contains Grilon XE 3139, the middle layer contains 50% Grilamid ELY20NZ and 50% Grilon CA6E, and the external layer contains Grilamid XE 3148. As explained during the interview, Table 1 includes a bracket around "Grilamid ELY20NZ 50%" and "Grilon CA6E 50%." An arrow points from the bracket to the phrase "0.20 mm middle," indicating that the

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<sup>1</sup>*Kerschbaumer* discloses that Grilon CA6E is "an amorphous copolyamide based on caprolactam/laurolactam" (col. 3, lines 30 and 31).

middle layer contains 50% Grilamid ELY20NZ and 50% Grilon CA6E. *Kerschbaumer* simply has no recognition or suggestion that the external layer thereof contains Grilon CA6E.

Furthermore, it is respectfully noted that the "Grilamid XE 3148" which is contained in the external layer of the Example 2 structure of *Kerschbaumer*, is not accompanied by any percentage value which would indicate that the external layer includes an additional material. Clearly, it is the middle layer, and not the external layer, of the Example 2 structure which includes Grilon CA6E.

As discussed during the interview, the phrase "0.20 mm external" in Example 2 of Table 1 of *Kerschbaumer* is staggered with the phrase "Grilamid XE 3148." Such staggering appears to be a clerical error upon review of German Patent Document No. 40 06 870 (*DE '870*), European Patent Document No. 0 445 706 (*EP '706*) and Japanese Patent Document No. 5-229041 (*JP '041*), each of which documents corresponds to *Kerschbaumer*.<sup>2</sup> For the Examiner's convenience, copies of the corresponding foreign patent documents are attached.

As can be seen from the table set forth in *DE '870* at page 3, the "Grilamid XE 3148" is adjacent to the third listed layer of Example 2, i.e., the "external" layer. Similarly, the tables set forth in *EP '706* at page 5 and *JP '041* at columns 3 and 4 appear to disclose the phrase "Grilamid XE 3148" adjacent to the "external" layer. In view of these corresponding foreign patent documents, it is further apparent that *Kerschbaumer* discloses that the external layer of the Example 2 layer structure contains Grilamid XE 3148, and not Grilon CA6E.

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<sup>2</sup>Also attached is an English abstract of *DE '870* which includes a list of corresponding patent documents. It is clear from this list that each of *DE '870*, *EP '706* and *JP '041* corresponds to *Kerschbaumer*.

*Kerschbaumer* discloses that Grilamid XE 3148 is "an impact resistance-modified PA 12" (col. 3, line 32). That is, Grilamid XE 3148 is not the same as or suggestive of the recited polyamide composition used to form the external layer. Moreover, *Kerschbaumer* discloses that the middle barrier layer of the structure contains a polyamide which is substantially free of impact resistance modifiers in order to increase the cold impact resistance of the multi-layered fuel line (col. 2, lines 4-7 and 31-33). *Kerschbaumer* also discloses using an impact resistant external layer to increase the impact resistance of the fuel line (col. 2, lines 7-9 and 28-30). In light of the completely different functions of the materials used to form the middle barrier layer and the external layer of the *Kerschbaumer* structure, one of ordinary skill in the art would not have been motivated to modify such structure by employing a material for forming the middle barrier layer, i.e., Grilon CA6E, to form the external layer thereof.

Furthermore, it is noted that *Kerschbaumer* discloses the following at column 2, lines 28-31:

Therefore, the multi-layered fuel lines of the invention have an external layer consisting of impact resistance-modified types of polyamide which can contain plasticizer. . .

While several of the materials set forth in the list of polyamides at column 3 of *Kerschbaumer* are described as being an "impact resistance-modified" polyamide, Grilon CA6E is clearly not described as being such an impact resistance-modified polyamide. In light of *Kerschbaumer*'s disclosure that the external layer consists of impact-resistance modified types of polyamide, there is simply no motivation or suggestion to use Grilon CA6E in the external layer of the *Kerschbaumer* structure.

*VanBuskirk et al* fails to cure the above-described deficiencies of *Kerschbaumer*. In this regard, the Patent Office has relied on *VanBuskirk et al* for disclosing the addition of a chain extender to polyamide 6 for the purpose of improving the physical characteristics of the polyamide 6 (Official Action at page 5). However, like *Kerschbaumer*, *VanBuskirk et al* does not disclose or suggest a multilayer structure comprising at least one external layer formed from the polyamide composition recited in claim 1. *VanBuskirk et al* does not even disclose or suggest a multilayer structure, let alone the claimed external layer formed from the polyamide composition of claim 1.

*EP '627* also fails to cure the above-described deficiencies of *Kerschbaumer*. In this regard, the Patent Office has relied on *EP '627* for disclosing an acid-modified ultra low density polyethylene which is used as an impact modifier of polyamide 6 (Official Action at page 6). However, like *Kerschbaumer*, *EP '627* does not disclose or suggest a multilayer structure comprising at least one external layer formed from the polyamide composition recited in claim 1. In fact, *EP '627* does not even relate to a multilayer structure, and merely discloses the use of the compositions thereof in the manufacture of "moulded and/or extruded pieces" (columns 3 and 4).

For at least the above reasons, no *prima facie* case of obviousness has been established with respect to one aspect of the present invention as defined by claim 1. Accordingly, withdrawal of the §103(a) rejections is respectfully requested.

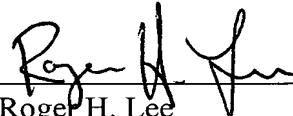
From the foregoing, further and favorable action in the form of a Notice of Allowance is believed to be next in order, and such action is earnestly solicited.

Application No. 09/462,179  
Attorney's Docket No. 022701-854

If there are any questions concerning this paper or the application in general, the Examiner is invited to telephone the undersigned.

Respectfully submitted,

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**Attachment to AMENDMENT PURSUANT TO 37 C.F.R. §1.116**  
**dated February 13, 2003**

**Marked-up claim 12, 24 and 25**

12. (Four Times Amended) Structure according to claim 1, wherein the composition forming the internal layer has a flexural modulus of less than 1500 MPa.

24. (Amended) Structure according to claim 21, wherein the composition forming the internal intermediate layer has a flexural modulus of less than 1500 MPa.

25. (Amended) Structure according to claim 1, wherein the at least one internal layer is [adjacently arranged with] adjacent to the at least one external layer.